

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior listings and versions:

1 to 6. (canceled).

7. (currently amended): A polynucleotide encoding an immunologically effective detoxified fragment of an *E. coli* heat labile toxin (LT-A) polypeptide, ~~wherein~~ said fragment ~~comprises an amino acid sequence selected from the group consisting of SLRSAHLR, LRSAHLRG, RSAHLRGQ, SAHLRGQS, AHLRGQSI, HLRGQSIL, LRGQSILS, and RGQSILSG.~~ comprising (i) at least 8 contiguous amino acid residues of SEQ ID NO:1 and (ii) the amino acid residue corresponding to Ala-72 of SEQ ID NO:1, and wherein said amino acid residue corresponding to Ala-72 is an arginine residue.

8. (previously presented): The polynucleotide of claim 7 further comprising a sequence encoding a second immunogenic antigen.

9. (previously presented): The polynucleotide of claim 8 wherein the second immunogenic antigen comprises a subunit B of an *E. coli* heat labile toxin (LT-B).

10. (previously presented): The polynucleotide of claim 9, wherein the LT-A and LT-B are encoded in a polycistronic unit.

11. (previously presented): An expression vector comprising the polynucleotide of claim 7.

12. (previously presented): An expression vector comprising the polynucleotide of claim 8.

13. (previously presented): An expression vector comprising the polynucleotide of claim 9.

14. (previously presented): An expression vector comprising the polynucleotide of claim 10.

15. (previously presented): A host cell comprising the expression vector of claim 11.

16. (previously presented): A host cell comprising the expression vector of claim 12.

17. (previously presented): A host cell comprising the expression vector of claim 13.
18. (previously presented): A host cell comprising the expression vector of claim 14.
19. (previously presented): The host cell of claim 15, wherein the host cell is selected from the group consisting of a bacterium, a mammalian cell, a baculovirus, an insect cell and a yeast cell.
20. (previously presented): The host cell of claim 19, wherein the host cell is *E. coli*.
21. (previously presented): The host cell of claim 19, wherein the host cell is a mammalian cell.
22. (previously presented): The host cell of claim 19, wherein the host cell is an insect cell.
23. (previously presented): The host cell of claim 19, wherein the host cell is a yeast cell.
24. (previously presented): The host cell of claim 19, wherein the host cell produces the amino acid sequence intracellularly.
25. (previously presented): The host cell of claim 19, wherein the host cell secretes the amino acid sequence.
26. (currently amended): The *E. coli* host cell of claim 20 ~~19~~, wherein the host cell is mutated to produce a phenotype lacking wild type LT-A.
27. (previously presented): A method of producing a recombinant protein comprising:
(a) providing a population of host cells according to claim 15; and
(b) culturing said population of cells under conditions whereby the LT-A or fragment thereof encoded by the polynucleotide in said expression vector is expressed.
28. (previously presented): A method of producing a recombinant protein comprising:
(a) providing a population of host cells according to claim 17; and

(b) culturing said population of cells under conditions whereby the LT-A or fragment thereof and the LT-B encoded by the polynucleotide in said expression vector is expressed.

29. (previously presented): A method of producing a recombinant protein comprising:

- (a) providing a population of host cells according to claim 26; and
- (b) culturing said population of cells under conditions whereby the LT-A or fragment thereof encoded by the polynucleotide in said expression vector is expressed.

30. (withdrawn): A polynucleotide encoding an immunologically effective detoxified fragment of an *E. coli* heat labile toxin (LT-A) polypeptide, ~~wherein said fragment comprises an amino acid sequence selected from the group consisting of SLRSAHLR, LRSAHLRG, RSAHLRGQ, SAHLRGQS, AHLRGQSI, HLRGQSIL, LRGQSILS, and RGQSILSG, comprising~~ (i) at least 8 contiguous amino acid residues of SEQ ID NO:2 and (ii) the amino acid residue corresponding to Ala-72 of SEQ ID NO:2, and wherein said amino acid residue corresponding to Ala-72 is an arginine residue.

31. (withdrawn): A polynucleotide encoding an immunologically effective detoxified fragment of an *E. coli* heat labile toxin (LT-A) polypeptide, ~~wherein said fragment comprises an amino acid sequence selected from the group consisting of SLRSAHLR, LRSAHLRG, RSAHLRGQ, SAHLRGQS, AHLRGQSI, HLRGQSIL, LRGQSILS, and RGQSILSG, comprising~~ (i) at least 8 contiguous amino acid residues of SEQ ID NO:3 and (ii) the amino acid residue corresponding to Ile-70 of SEQ ID NO:3, and wherein said amino acid residue corresponding to Ile-70 is an arginine residue.

32. (withdrawn): A polynucleotide encoding an immunologically effective detoxified fragment of an *E. coli* heat labile toxin (LT-A) polypeptide, ~~wherein said fragment comprises an amino acid sequence selected from the group consisting of SLRSAHLR, LRSAHLRG, RSAHLRGQ, SAHLRGQS, AHLRGQSI, HLRGQSIL, LRGQSILS, and RGQSILSG, comprising~~ (i) at least 8 contiguous amino acid residues of SEQ ID NO:4 and (ii) the amino acid residue corresponding to Leu-70 of SEQ ID NO:4, and wherein said amino acid residue corresponding to Leu-70 is an arginine residue.